Referring to Fig. 4 of the present application, Applicant's electric power switch includes an impedance contactor **60** that includes an annular retracting contact **62** that surrounds the fixed contact **52** of the power contactor **50**. As shown in cross-section in Fig. 11, the retracting contact includes a timing device in the form of an internal pneumatic chamber **72** that is vented by a restrictive orifice **78**. Locating the pneumatic chamber of the timing device within the retracting contact, which surrounds the fixed contact of the power contactor, results in a compact contactor assembly that minimizes the size of the dielectric gas chamber, more specifically the insulator **16**, that contains the mechanism. See Fig. 1-3.

For example, the alternative of locating a separate impedance in-line with the power contactor, as shown in Thuries et al., increases the required length of the insulator. A second alternative of locating a separate impedance contactor to the side of the power contactor, as shown in Yano et al., increases the required width of the insulator. It should therefore be appreciate that configuring the retracting contact as an annular chamber that surrounds the fixed contact of the power contactor and contains the pneumatic timing device results in a smaller, lower cost device.

In addition, as explained on page 14, lines 15-21 of the present application, locating the timing device on the non-traveling retracting contact, rather than the traveling contact, as shown in Pham Van et al., avoids placing the weight associated with the timing device on the traveling contact. Because the traveling contact must be accelerated to a proper speed for the switch to function properly, locating the timing device with the stationary contact results in a smaller and less expensive accelerator.

Turning now to a more detailed discussion of the references, Thuries et al. at Fig. 2 shows an electric power switch that includes an impedance contactor having a

pneumatically damped retracting contact **19**, which is referred to as an "insertion device." The retracting contact includes what amounts to a piston head on the rear of the bell-shaped part **51** of the retracting contact, which fits into the pneumatic chamber **44** as the retracting contact reaches the end of its opening stroke (upward in Fig. 2). The pneumatic chamber **44** functions as a damper for the opening stroke of the retracting contact and the restrictive vent **46** allows gas to escape from the chamber **44** under the pressure exerted by the piston head of the retracting contact **19**. The desired timing is effected by resistance of the chamber **44** as vented by the restrictive orifice **46** to pneumatic expansion during the closing stroke (downward in Fig. 2). Although this configuration has some functional similarities to Applicant's switch, the pneumatic chamber **44** is not located around the fixed power contact **21**, but is instead positioned above (as shown in Fig. 2) and in-line with the power contact. This makes the Thuries et al. device longer than Applicant's configuration, which requires a longer and more expensive dielectric chamber to house the internal components of the switch.

Accordingly, Thuries et al. fails to discloses a "retracting contact surrounding the fixed contact" as recited in claims 1, 14 and 26 of the present application. Thuries et al. also fails to disclose a pneumatic timing device located "within" this type of retracting contactor. This aspect of the invention is recited in claims 1, 14 and 28 as follows:

> a timing device ***comprising a pneumatic chamber within the retracting contact vented by a restrictive orifice*** operable for causing the impedance contactor to close before the power contactor on the closing stroke, and to cause the impedance contactor to open before the power contactor on the opening stroke.

In fact, none of the references of record show or suggest the structure recited above. Therefore, Thuries et al. by itself or in combination with any other reference of

record cannot establish a *prima facie* case of obviousness for this invention because each element of the claimed invention is not shown or suggested in at least one of the cited references. MPEP § 2143.03.

In addition, the Thuries et al. switch implements the timing function through resistance to pneumatic expansion on the opening stroke, whereas Applicant's device implements the timing function thorough by resistance to pneumatic compression on the opening stroke. This aspect of the invention is recited in claims 10, 24 and 33.

Referring again to Fig. 4 of the present application, Applicant's electric power switch also includes an impedance **30** that is located within an end cap **20**. Within the end cap, the impedance is supported by a base plate **38** that is electrically connected to the insulator by a shunt **36** and spaced from the bottom end of the cap by three insulating spacers **44**. The base plate is connected to the retracting contact **62** by way of three posts **40A-C** that extend through holes in the base plate. The posts support the retracting contact adjacent to the end cap and also carry current between the retracting contact and the impedance during operation of the switch. This aspect of the invention is recited in claims 11, 21 and 26, as shown below:

> 11. The electric power switch of claim 4, wherein a first end of the impedance is in electrical contact with a first end of the cap, further comprising:
>
> a base plate located within the cap supporting a second end of the impedance;
>
> at least one insulating spacer located between the base plate and a second end of the cap;
>
> at least one post extending from the base plate and through a hole in the second end of the cap, the post supporting the retracting contact adjacent to the second end of the cap;
>
> wherein the post carries an electric current between the retracting contact and the impedance during operation of the switch.

This configuration, which is enabled by the annular pneumatic chamber design of the retracting contact and its location around the fixed power contact, produces a compact mechanism that minimizes the size and cost of the device. This configuration also permits the impedance **30** to be removed from the switch by taking the lid off the end cap without having to further disassemble the switch. Applicant therefore submits that claims 11, 21 and 26, and their dependent claims, are patentable over Thuries et al. and the other references of record in this action.

Applicant also brings the examiner's attention to Pham Van et al., US 4,338,500 and Yano et al., US 5,567,924. Pham Van et al. shows an electric power switch with an impedance contactor having a retracting contactor **2** that moves with the traveling power contact **7**. This is shown in Figs. 2-7 and described in the accompanying text beginning at col. 2, line 55. It should therefore be appreciated that this references does not show a retracting contact that surrounds the fixed contact. That is, the contact **3**, which remains fixed with the stationary power contact **6**, is not a retracting contact. Rather, the contact **2**, which travels with the moving power contact **7**, is the retracting contact in this device. Applicant's switch, as recited in claims 1, 14 and 26 ("retracting contact surrounding the fixed contact") improves over this design by locating the retracting contact with the fixed power contact to avoid placing the associated weight on the traveling contact.

In addition, Pham Van et al. discloses a mechanical timing device that includes a ball-detent **19** and latching mechanism **20, 21**, as shown in Figs 2-7. Applicant's switch improves over this type of device with a pneumatic timing device located within the retracting contactor. Pham Van et al. does not disclose or suggest this type of timing device, and further fails to disclose or suggest locating the retracting contact around the

fixed power contact. Pham Van et al. also fails to disclose or suggest the inventive impedance, end cap and retracting contact configuration recited in claims 11, 21 and 26 of the present application.

Referring now to Fig. 1 of Yano et al., this electric power switch includes an impedance contactor (S2) located to the side of the power contactor (S1). In this device, the impedance contactor does not surround the power contactor, but is instead located beside and a significant distance away from the power contactor. Applicant's switch improves over this configuration through the use of an annular retracting contactor that surrounds the fixed contact of the power contactor. As noted above, Applicant's configuration produces more compact design that minimizes the width of the insulator that houses the switch. Yano et al. also fails to disclose or suggest the inventive impedance, end cap and retracting contact configuration recited in claims 11, 21 and 26 of the present application.

CONCLUSION

As discussed above, Applicant believes that the claims, as amended, are in condition for allowance. If the examiner believes that there are any issues that can be resolved by a telephone conference, or that there are any informalities that can be corrected by an Examiner's amendment, please call Mike Mehrman at (404) 497-7400.

Respectfully submitted,

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